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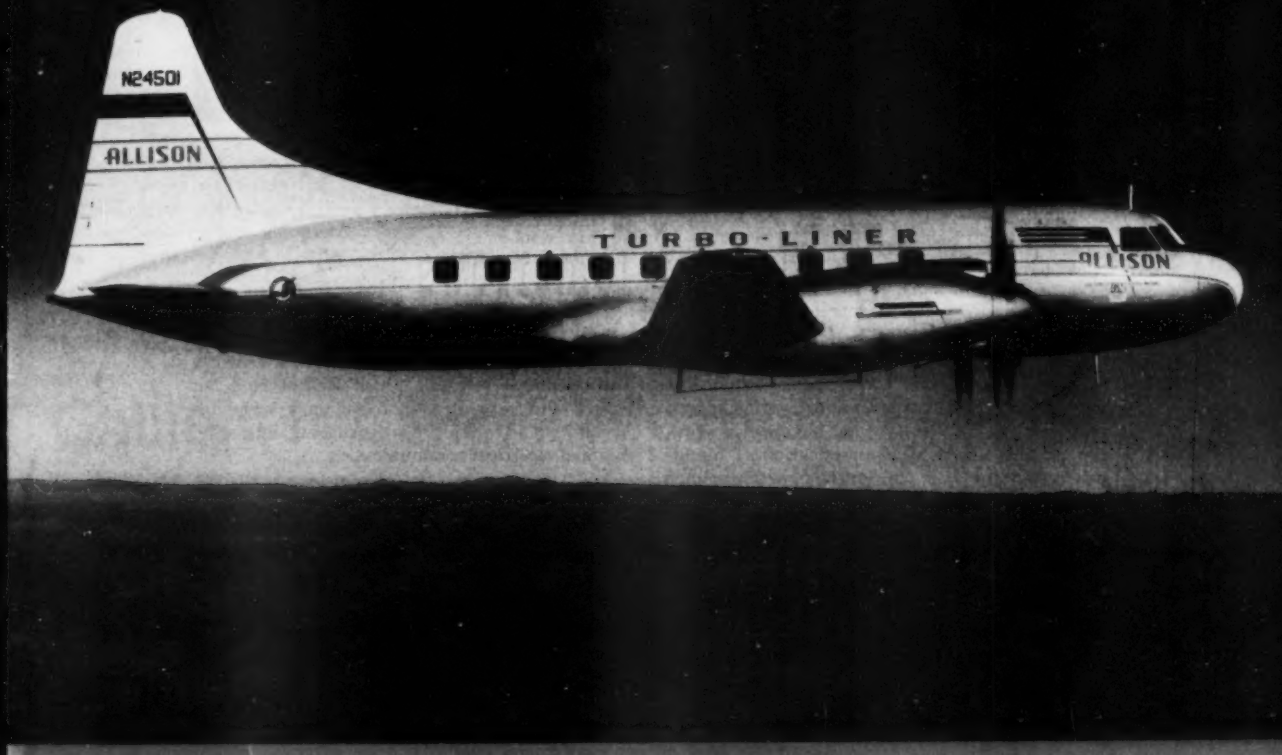
SCIENCE NEWS LETTER®

THE WEEKLY SUMMARY OF CURRENT SCIENCE



Turbo-prop Transport

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VOL. 59 NO. 14 PAGES 209-224

"Mr. Bell, I heard every word you said—distinctly!" **Thus, on March 10, 1876, Alexander Graham Bell (left) learned that his invention had transmitted the first intelligible speech.**

75 Years of Tomorrows

Like today's telephone, Alexander Graham Bell's invention was a product of research. For several years Bell had been investigating speech and hearing, and devising methods and apparatus for the electrical communication of intelligence. No one had transmitted speech sounds electrically but Bell saw that it must be possible —given the proper instruments.

One day, while experimenting with his harmonic telegraph, Bell's alert ear caught an unexpected sound in the receiver. His trained mind told him that here at last was the proof that sound waves could travel as their facsimile in electric waves. Then followed a year of development, and in 1876, as shown above, he transmitted the first intelligible speech by telephone.

During the next three-quarters of a century, the telephone research which Bell started has grown and expanded to serve your telephone system . . . often fruitfully overflowing into other fields of electrical communication.

In today's Bell Telephone Laboratories, promising ideas find the right skills to bring them to life. Through skilled manufacturing by Western Electric Company and skilled operation by the telephone company they are brought to the service of the telephone user.

The high quality of your telephone today, its fine, swift service at reasonable cost, are the products of work in the telephone laboratories in the past. The greater value you may expect in the future is taking form there already.

BELL TELEPHONE LABORATORIES

Exploring and Inventing, Devising and Perfecting, for Continued Improvements and Economies in Telephone Service

GENERAL SCIENCE

One More Year of College

Over half of students now eligible for draft to get one more year of college under new plan drawn up by government. President Truman signed order.

► UP TO 166,000 college students will be eligible for the draft at the end of this school year under the new college deferment plan. Up to 204,000 other students who would otherwise be draft-eligible in June will have their service postponed for another year of college. Most high school seniors who want to go to college next year will be able to complete one year at least.

The new policy calls for postponement of service of college students who meet the following requirements: 1. They must achieve a passing mark on a new Selective Service Qualification Test, or 2. Freshmen must be in the upper half of their classes, sophomores in the upper two-thirds and juniors in the upper three-quarters. This year's seniors who want to go to graduate school and are qualified, may do so, with no restrictions as to numbers.

In addition to the 166,000 who may be picked up by the Armed Forces in June, another 40,000 seniors in R. O. T. C. will be given active commissions as officers.

The other 649,000 male, full time undergraduate students are either veterans, already classified as Four-F or undergraduate R. O. T. C. members.

An authoritative government source figures that allowing students to be deferred if they achieve a passing mark on the new test even though they do not place high in their classes will add about 10% to the 190,000 who would be deferred if only class standing were taken into account. Other sources, however, say this percentage might be higher.

Already, Harvard officials have announced that their students would average between 130 and 150 in the old Army General Classification Test. An equivalent in the new test of 120 or above on the old AGCT would mean deferment for a student.

Colleges and universities, in addition to Harvard, which select their students on the basis of rigid standards would, under this plan, lose very few students. On the other hand, many lower-standard smaller colleges would lose most of their male students if only the test were used as a criterion.

Only 16% of the general population would receive marks higher than 120 on this test. It is believed that between 40% and 50% of the college population would rate above 120.

The new test will be administered by Educational Testing Service, Princeton, N. J. ETS has handled College Entrance Examination Board tests for years.

Science News Letter, April 7, 1951

MEDICINE

Gallium Is Cancer Weapon

► A NEW radioactive weapon against bone cancer will come from the atom-smashing cyclotron, if certain technical difficulties can be overcome.

This future prospect was forecast by Comdr. H. C. Dudley, head of the biochemical division at the Naval Medical Research Institute, Bethesda, Md.

The new cancer weapon will be an isotope of radioactive gallium. It will be made by cyclotron bombardment of zinc.

Radioactive gallium itself, made in the Oak Ridge atomic pile, has given some relief of pain to patients with cancers that spread to the bone, Navy surgeons have found. While the results have been promising enough to go on with trials of it, "it is certainly no miracle drug," Comdr. Dudley declared in reporting the work with it to date.

Radioactive gallium made by neutron irradiation of natural gallium has two disadvantages: 1. the toxicity of the non-radioactive part, which limits the amount that can be given in treatment; 2. its short half-life of only 14.3 hours, 70% of it decaying in 24 hours.

Cyclotron-made radioactive gallium from zinc, on the other hand, can be separated from the zinc and will be free of any toxicity due to gallium or other metal. Also it has a half-life of 78 hours, only 20% of it decaying in 24 hours.

About 20 times as much radioactive gallium concentrates in the bone cancers as in the adjacent healthy bone, the Navy studies have shown.

The radioactive gallium also may be useful for detecting bone cancers. Early spread of cancer to bones has been detected by tracer amounts of the radioactive chemical before changes could be found by X-ray film studies.

Science News Letter, April 7, 1951

"CLOSE-UP LENS"—This special lens assembly, designed and built by Kurt Kriegsmann of the Naval Ordnance Laboratory, enables a photographer to take a close-up picture of objects over much longer distances than previously.

RESOURCES

Re-use by Industry Lessens Water Shortage

► THE GROWING shortage of water in areas where industrial plants require large quantities can be met in part by using the same water over and over again, Howard E. Degler, Marley Company, Inc., Kansas City, Kans., told the American Society of Mechanical Engineers meeting in Atlanta, Ga.

This is particularly true where the water is used in cooling equipment. Once-through use of water in industry is wasteful, he declared. He outlined the principles of evaporative cooling and described the operation of mechanical draft cooling towers and air-cooled finned tube exchangers.

The towers, he said, require less than one per cent evaporation of the water circulated to cool the water economically. The air-cooled exchangers are being increasingly used where high-level heat removal is required and where water is scarce, expensive or badly polluted.

He named as large industrial users of water, power plants, manufacturers of paper, petroleum products, rayon, linen, textiles, lactose, sugar, explosives, hydrogen, rubber and steel.

Hydrogen and synthetic rubber each require 2,500 pounds of water per pound of finished product, he stated. Wool requires 500 pounds of water per pound of finished product, lactose 800, butadiene 1,200, rayon 800 and gun powder 400.

Science News Letter, April 7, 1951

METEOROLOGY

Waterless Season Disaster

Farmers in Middle Rio Grande region, usually heavily irrigated, face prospect of no water in July and August. Rain and snow only 43% of normal.

➤ THOUSANDS of farmers in the heavily-irrigated Middle Rio Grande Valley of New Mexico today face a virtually waterless season.

With a second consecutive year of drought shaping up, expected Rio Grande runoff now is estimated at about 30% of normal. Water behind key dams is dangerously low or almost gone.

This means that if the drought goes on, the 80,000-odd Middle Valley acres will have no water in July and August, the heavy irrigating season, and that water for the lush cotton lands in southern New Mexico and west Texas will be severely short.

The badly needed rain and snow between last Oct. 1 and the start of March was only 43% of normal.

The critical situation, part of general dryness in the Southwest, also brought these developments:

1. There's a likelihood of a second consecutive wheat failure in eastern New Mexico and Colorado, western edge of the dust bowl of the 30's.

2. Farmers and ranchers have banded together to hire commercial rainmakers in the hope of getting relief, despite the cries of others that the rainmakers may have caused the present situation.

3. The Budget Bureau has approved a $2,000,000 appropriation for relief-aimed emergency work on the already Congress-approved $73,000,000 Middle Rio Grande Project.

Directors of the Middle Rio Grande Conservancy District, heart of the troubled area, have told water users to plant for the summer season at their own risk. Damage to permanent crops such as orchards and alfalfa is feared.

They advised farmers to drill wells to supplement the short water supply, and hundreds were being sunk along the river with no certain knowledge of the effects on underground water tables.

The directors also asked for a scientific investigation of the effect of rainmaking on moisture conditions. The rainmakers, criticized from several sides, have denied that their operations caused the present situation.

In eastern New Mexico and Colorado, the situation boils down to how soon moisture will come and what the intensity of the now beginning seasonal winds will be.

Except for a few areas, the winter wheat must have moisture within no more than 30 days to live. The situation is complicated in New Mexico by infestations of cut worms, aphis and greenbugs.

It is successive wheat failures that cause dust bowls, and so emergency tilling to discourage wind erosion already has begun.

But Soil Conservation Service spokesmen said the needed moisture may come in time. They expressed belief that if the worst happens, farmers' knowledge of soil-saving practices will help control the situation.

With prospects for good ranges and crops evaporating along with remaining moisture, farmers and ranchers have contracted for rainmaking activities over almost the entire state.

Associations usually are formed to raise what is said to be sometimes as much as $25,000 to hire rainmakers, who "salt" moisture-bearing clouds with chemicals to cause rain over certain areas.

The $2,000,000 appropriation for the Middle Valley would be used to dredge a channel through a 10,000-acre swamp land in central New Mexico where water-hungry salt cedars sponge up much water.

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Question Box

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Photographs: Cover, Consolidated Vultee Aircraft; p. 211, Naval Ordnance Laboratory; p. 213, University of California at Los Angeles; p. 215, U. S. Air Force.

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PSYCHOLOGY

Study Disaster Effects

Government making tentative plans to study psychological and sociological upheavals caused by major disasters. Aim is to gain knowledge for control of panic.

➤ THE GOVERNMENT has tentative plans to establish Disaster Study Teams in 19 major American cities to study the psychological and sociological upheavals caused by major disasters. The knowledge gained would be applied to the control of panic in A-bomb attacks. This would be the first such study.

Right now, the plans are being discussed by several government agencies, including the Defense Department, the Federal Civil Defense Administration and the National Research Council. The project is being pushed because it has been recognized that panic will be one of the major problems in the event this country is A-bombed.

Purposes of the plan, subject to change after further discussion, are given as follows:

To study the psychological reactions and behavior of individuals and local populations in disaster, for the purpose of developing methods for the prevention of panic, and for minimizing emotional and psychological failures.

To study the sociological upheavals caused by major disasters, in order to devise means to keep the essentials of community government, utilities and service in operation.

In addition, the project would be designed to find out what resources, both inside and outside the community, are available to cope with mass panic and consequent breakdown of communities.

Although the plan is still tentative, doctors from all over the nation have been selected and are being considered as heads of local disaster study teams. In the event of major disasters in their neighborhoods—floods, factory explosions and large fires—they would be expected to make studies of psychological reactions on the part of the people, government officials and relief agency personnel.

The 19 cities tentatively chosen as sites for disaster study teams are: Atlanta, Baltimore, Boston, Chicago, Cleveland, Dallas, Denver, Detroit, Los Angeles, Minneapolis, New Orleans, New York, Philadelphia, Pittsburgh, Richmond, Saint Louis, Salt Lake City, San Francisco, and Seattle.

Suggested areas of psychological investigation include mass population behavior of those involved in a disaster, the individual behavior of victims, the behavior of untrained bystanders, of trained rescue workers and of the local public which has not been involved in the disaster.

In the sociological area, it is suggested that the participation and effectiveness of local government officials, the police and fire departments and utility, communications and transportation organizations be studied.

In addition the setups for rescue operations, medical aid and supply of needed equipment and materials would be investigated.

Science News Letter, April 7, 1951

GENERAL SCIENCE

Autos Counted by Robot That Sorts Out Speeds

➤ A NEW vehicle-speed counter has been developed by two University of California at Los Angeles scientists which makes the task of checking highway traffic flow an easy one for the operator. He can relax while the machine does most of the work.

The new vehicle-speed counter can (1) tab the passing of a large number of cars, (2) segregate them according to speeds, and (3) record the speed of any given vehicle within an accuracy of plus or minus one thousandth of a second.

Daniel L. Gerlough and F. D. Schreider of the University's Institute of Transportation and Traffic Engineering are the inventors of the device.

The highly rugged instrument, which can be handled by one technician, is about the size of a lady's vanity case and weighs only 33 pounds. A separate power unit is about the size of an automobile battery and weighs 34 pounds.

On the face of the instrument are ten counters which can be set to record various speed ranges: 0-15 m.p.h., 15-20 m.p.h., 20-25 m.p.h., etc.

Two detector strips are placed across the highway, three feet apart. When an automobile runs across the strips, the machine automatically computes the difference in time between activation of the strips, translating this time difference into miles per hour.

Science News Letter, April 7, 1951

MINERALOGY

New Mineral, Pale Mauve, Found in Cut Gem Stones

➤ THE WORLD'S first discovery of a new mineral from cut gem stones is reported in London. It is pale mauve, containing magnesium, beryllium and aluminum, and quite hard. It is believed to have come from Ceylon. Only two specimens of this gem mineral have been found, both of them as cut stones.

Science News Letter, April 7, 1951

SPEED COUNTER—The new UCLA-developed vehicle speed counter can be operated by one technician. Power unit, battery-sized and weighing 34 pounds, is on the ground.

MILITARY SCIENCE

Can Planes Be Stopped?

Intercepting supersonic planes carrying A-bombs would be job for complex radar-computer mechanism. Aim is to explode "eggs" short of target.

➤ TO KEEP atomic bombs away from American cities, some means is needed to intercept a supersonic bombing plane or long-range flying bomb and explode its atomic "eggs" short of the intended target.

No such "anti-missile missile" as the ordnance experts put it, seems to exist although there have been published rumors of a "deflection beam" that is supposed to be able to turn a bomb from its course.

A rocket that would intercept an incoming A-bomb traveling faster than the speed of sound would have to be guided by a most complex radar-computer mechanism which would affect its controls and make it meet the invading missile. Radar would detect the invader. The defending missile would have to get started when the invading missile was many miles and many minutes away. The defending missile would need to be controllable, responsive to the changes that the invading missile makes in its direction or speed.

Some of the parts of the mechanism needed already exist in the radar-linked fire control devices for anti-aircraft artillery which utilize computers, but these controls and anti-aircraft batteries themselves are almost obsolete now that the supersonic bomber and missiles are realities.

It will do no good to shoot down invading planes after they have discharged their bomb loads. The big problem is to catch them before they get to their targets and destroy them in the air.

Any countering device would have to have enough punch and momentum to affect the invading missile or plane. Newton's laws of motion apply.

No beam of radiation would have enough to it to do the job, even if the relatively immense distances involved did not dissipate the energies involved. So-called "death rays" have not worked even over limited distances on the ground.

Sound has been suggested as a weapon and various experiments have been made both in this country and in Germany during World War II. Sound carries energy and can be made directional. Rabbits have been killed by sound at short range. But stopping A-bombs with sound would seem to be impossible.

The Germans tried anti-aircraft wind guns, projecting plugs of air by explosions of mixed hydrogen-oxygen gas and other explosives. This might bring down an airplane at several hundred yards, but again it would be ineffective at long range.

Such unconventional methods do not seem promising. Success, if it comes, will probably be along rather conventionally-principled rocket and jet devices with extremely complex and complicated controls, mothered by electronic "brains", perhaps riding along radiation beams moved to make the guided missile intercept the enemy's A-bomb.

All of which will take millions upon millions of dollars and require a major part of our technical and scientific skill.

Science News Letter, April 7, 1951

GENERAL SCIENCE

Boston Has New Museum, Show Window for Science

➤ THE NEWEST thing in museums is Boston's show window for science, the new Museum of Science. A modern building that can be rearranged completely inside to meet future needs, it now contains the world's only permanent atomic energy exhibit outside of the government display at Oak Ridge. Other exhibits show a big airplane engine and a telephone setup that allows visitors to see and hear their own voices. A mechanical man and dog, electrically operated, greet visitors.

Science News Letter, April 7, 1951

CHEMISTRY

Smash Atoms for Better Thyroid Chemical Treatment

➤ A CHEMICAL made in the atom-smashing cyclotron might become a remedy for certain thyroid gland disorders, maybe even including cancer, if it proves as effective in humans as it did in rat trials reported to the American Association of Anatomists, Detroit.

The chemical is astatine, formerly known as element 87. It is a sister chemical to iodine. Radioactive iodine is now used to treat cancer of the thyroid gland in the neck and also one form of goiter, the toxic goiter in which the gland is overactive.

Radioactive iodine can be used for this because the thyroid gland picks up and utilizes almost all the iodine in the human system, normally about 80 times as much as any other tissue. The beta rays of the radioactive iodine destroy the overactive gland and, in the case of cancer of the gland, destroy the cancer.

Astatine, sister to iodine, is also picked up by the thyroid gland, a seven-man research team at the University of California reported. Like radioactive iodine, it destroys thyroid tissue.

Astatine is effective at lower doses than radioactive iodine. This, the scientists suggested, may be because it gives off alpha rays, whereas radioactive iodine gives off beta rays.

Even with the biggest doses, astatine did not damage the parathyroid glands, small but important structures located very close to the thyroid.

The scientists reporting this work are: Drs. C. W. Asling, J. G. Hamilton, K. G. Scott, P. C. Wallace, W. M. Garrison, G. P. Thilo and D. C. Morrison.

Science News Letter, April 7, 1951

ORNITHOLOGY

Wrens Avoid Yellow Bird Houses for Nests

➤ HOUSE WRENS for some reason avoid a bird house painted yellow, it was indicated in tests made by Profs. R. A. McCabe and R. S. Ellarson, of the University of Wisconsin's wildlife management department.

As part of a study on the nesting of songbirds, the two men checked 10 groups of wren houses for four years, each group consisting of five boxes of the same type except for color. Each group included a red, yellow, green, white and a blue box.

It was found that only one wren will nest in each group, and the wrens, for reasons unknown, seemed to avoid the yellow boxes. They showed no definite preference for any one of the other colors.

Songbirds will be much more apt to nest and stay in a place where plenty of water is kept available for them to drink and bathe in, it has been shown. Birds like the sight and sound of water in motion, so hanging a can filled with water above a bird bath and letting the water drip into the bath through a hole in the bottom of the can, will help attract birds to the premises.

Science News Letter, April 7, 1951

INVENTION

Magnesium Alloy Has High Structural Strength

➤ A STRUCTURAL magnesium alloy, on which a patent was granted, has exceptionally high strength value, especially under compression loads, making it suitable for many applications where other magnesium alloys cannot be used.

This alloy is 6% to 12% lithium, 16% to 25% zinc, 1% to 20% cadmium and the balance of magnesium. The inventors are Donald L. Leman, Freeland, and John J. Casey, Midland, Mich. Patent 2,546,931 was awarded to them. Patent rights are assigned to The Dow Chemical Company of Midland, but the government was given the right to use it for governmental purposes without the payment of royalties.

Science News Letter, April 7, 1951

CHEMISTRY

Resists High Temperature

New orlon fabric shows high heat resistance after heat treatment as woven material. Discovery of process was accidental.

▶ ONE OF America's latest synthetic fibers, orlon, has now been converted into a black substance that has the unusual properties of resisting temperatures as high as 1,400 degrees Fahrenheit.

Heat-resisting orlon was discovered by accident in the laboratories of DuPont in Wilmington, Del., where orlon, as well as nylon and dacron (formerly known as fiber V), were developed.

A piece of woven orlon was left in an oven and heated accidentally to 275 degrees Fahrenheit. Instead of being ruined, the fabric was found to have the ability to resist very high heat. The fabric became black in the process and the new kind of orlon seems to be limited to that color alone.

So new is this new application of orlon that plans as to how it is to be utilized are not yet made. Many applications to military use can be visualized, such as use in garments to be worn by fire-fighters who must rescue those from crashed planes. Since the heat-resisting black orlon would not be ignited by incendiary bullets, it might prove effective in parachutes for dropping cargo during combat. In industrial use, it could be used for awnings and curtains that need to be fireproof and for which the black color is not objectionable.

The fabric to be converted is 100% orlon and it is woven before the heat treatment that makes it heat- and flame-resisting. It loses some tensile strength in the process.

Orlon is a polymer of acrylonitrile. It is in production and has appeared on the market in shirts and sweaters. DuPont is now building large factories for orlon production.

Just what happens when orlon is heated to make it temperature-resisting has not yet been fully worked out by the DuPont chemists, but there seems to be a rearrangement of the carbon atoms in the complex chemical molecule that is orlon.

Science News Letter, April 7, 1951

MEDICINE

Xenon Surgical Anesthetic

▶ XENON, THE elemental gas that produces vivid purples in the multi-colored gaseous discharge advertising signs, has been used successfully as a surgical anesthetic at the State University of Iowa hospitals and college of medicine, Iowa City.

Following the successful performance of four major operations using the new anesthetic, a four-man research team disclosed that xenon appears safe to administer and easy on the patients.

Members of the research team were Drs. Stuart C. Cullen, E. G. Gross, Robert M. Featherstone, and Charles Pittinger.

Xenon is non-inflammable. It is therefore much safer to administer than many of the anesthetic gases currently used, in which there is the ever-present danger of explosion and fire. Although this danger has been well-controlled, it is still necessary to take every precaution in order to assure safety.

They also point out that xenon produces anesthesia very rapidly, adding that recovery from anesthesia is equally rapid. Patients who have undergone surgery with xenon as an anesthetic experienced no ill effects and became alert in a few minutes after removal of the anesthetic gas.

The Iowa doctors began working with xenon last summer, investigating its possibilities. Animal research proved it to be an effective anesthetic without harmful effects.

Only after extensive research with a variety of animals and after using the gas on themselves did the researchers pronounce xenon safe to use on patients in University hospitals.

Xenon is a rare gas, found only in minute quantities in the atmosphere. The gas used at Iowa for research purposes was supplied by the Linde Air Products Company, and is a by-product in the commercial manufacture of oxygen and nitrogen.

Although costly now, the investigators believe it may be possible to produce xenon economically and in sufficient quantities for general use as an anesthetic.

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GEOLOGY

Soils and Dirt Aid FBI In Solving Crime Cases

▶ SOLVING all kinds of crime cases with the methods of geology is standard practice for the Federal Bureau of Investigation, Dr. Richard W. Flach of the FBI told the Geological Society of Washington, D. C., meeting.

Soils, for instance, often can give important clues as to where to search for hit-and-run drivers. Or, by matching the dirt found on the body of a hit-and-run victim with that from a suspect car, the case may be solved, Dr. Flach explained to the geologists. Soil analysis is also helpful in assault and in hi-jacking cases.

Safe-crackers often pick up on their clothes tiny particles of the mineral insulation that goes between the two cement layers of fire-resistant safes. Matching these particles with the insulating material may prove a suspect's guilt. In one recent case, Dr. Flach pointed out that not only one but three safe-cracking cases were solved when five pairs of trousers from a suspect yielded material that matched the most recently robbed safe as well as two safes ransacked in neighboring counties.

Often the same particles that are found on a person's hat or gloves, dropped at or near a crime scene, give valuable tips as to the owner's occupation, and, therefore, the most likely places to search for suspects.

Attempts at sabotage, Dr. Flach said, are among the other crime cases where mineralogical examinations are of aid in crime detection. The sand, emery, silicon carbide or other minerals used to foul up the oil of tanks, autos, or machinery in war production plants can be compared and matched with the small particles found on a suspect's clothing.

Science News Letter, April 7, 1951

QUICK EJECTION—Easier escape from the seat of their planes for jet pilots comes from combining the four leads, wires that connect a pilot to his plane and its equipment, into one long rubber cable that can be separated from the plane when the ejection seat is lever triggered.

ORNITHOLOGY

Ancient Murrelet Bird Found in Oregon Interior

➤ AN ANCIENT murrelet, a small water bird that lives on the rocky coast in the far north, has been found east of the Oregon Cascades. This species has never before been reported alive in Oregon. A few dead murrelets have been found on the Oregon coast where they had been washed in from the ocean.

"This is the greatest find in Oregon bird history in years," says Stanley G. Jewett of Portland, naturalist and author of "Birds of Oregon." Mr. Jewett considers the discovery of the sea bird in the interior of Oregon "a most remarkable occurrence." The murrelet was probably carried into Bend, Ore., where it was found, by an Aleutian-born storm. Away from the salty spray of the ocean murrelets will neither eat nor drink.

The ancient murrelet is an expert diver, and swims very rapidly under water, where it pursues fish with such energy as sometimes actually to drive them to the surface.

Science News Letter, April 7, 1951

INVENTION

Wood Drying Process for Green Lumber Patented

➤ GREEN LUMBER can be dried without the formation of surface checks, which result in waste in manufacturing processes, by completely coating the wood with a hygroscopic paste before it is put into the kiln for curing. Such checking, occurring in most drying processes, is due to the outside part of the wood losing its moisture more rapidly than the interior, therefore having to "stretch." This paste makes the drying proceed at a uniform rate throughout the material.

The inventors are William Karl Loughborough and John Milton McMillen, Madison, and Leif Dedrick Espenas, Middleton, Wis. Patent rights on No. 2,546,162 are assigned to the United States as represented by the Secretary of Agriculture.

Science News Letter, April 7, 1951

NUTRITION

Little Lambs Now Grow Fat On Diet of Almond Hulls

➤ EQUAL PARTS of almond hulls and barley have been used successfully to fatten lambs, it was announced by the University of California Agricultural Experiment Station, Davis, Calif.

To be used as livestock feed, the almond hulls must be properly dried and should be coarsely ground. They should never be fed alone, for they provide very little protein. Mixed with barley and alfalfa hay, however, they make a well balanced ration that is very palatable.

Not all almond hulls have the same food value. The dried hulls of the soft shell variety are more nutritious than the hard shell, which are less fleshy and furnish very little energy.

Lambs fed two months on ground soft shell almond hulls, barley, and alfalfa hay not only made better weight gains but gave a higher dressed yield when slaughtered than those fed on the hard shell hulls in the same combination and for the same length of time.

Science News Letter, April 7, 1951

MEDICINE

New Blood Group, Like Rh, Endangers Babies' Lives

➤ A NEW blood group has been discovered by Drs. Fred H. Allen, Jr., Louis K. Diamond and Bevely Niedziela of Children's Medical Center, Boston.

About 77% of Americans have this newly discovered blood group antigen in their red blood cells.

The new blood group was discovered when a mother's sixth baby developed the dangerous jaundiced condition, erythroblastosis fetalis. The blood serum of the mother, Mrs. Kidd, had antibodies to the antigen in her baby's red blood cells. This caused the sickness in the baby, as in the case of mothers and babies when there is Rh blood group trouble.

The new blood group antigen should be named Jka after Mrs. Kidd's son, the Boston scientists propose. They are now investigating the way in which it is inherited. Discovery of the new blood group antigen is announced in the British scientific journal, NATURE (March 24).

Science News Letter, April 7, 1951

MATHEMATICS

Soviet Scientists Possess Brains—Electronic Ones

➤ SOVIET scientists are developing electronic "brains" or calculators of the type in use in America, a survey of mathematical publications in the U.S.S.R. has revealed.

Mathematical work of Soviet mathematicians in the years since World War II is of the same general quality as that found in American journals, Robert J. and Paul W. Howerton of Denver, Colo., report to the American Association for the Advancement of Science's journal SCIENCE (March 23).

Some Soviet mathematicians are particularly prolific, suggesting that research mathematicians in the Soviet Union have no other occupation, such as teaching, to divert their attention away from research.

No more politics are injected into Soviet mathematical journals than one would expect to find in similar journals published in America.

Science News Letter, April 7, 1951

IN SCIENCE

MEDICINE

Hardening Eyeballs Taking Sight of 800,000 Americans

➤ A TWO-FOLD attack is needed to solve the mystery of a disease that is taking the eyesight of 800,000 Americans who do not now know that they are going blind.

The disease is glaucoma. It is a hardening of the eyeball due to an increase of the fluid within it. The increase in fluid pressure damages the retina, destroying sight.

For the two-fold attack, scientists must study the eye itself and the person whose eyes have developed the disease, Dr. Eugene M. Blake of Yale University declared at the meeting of the National Society for the Prevention of Blindness in New York.

Research in psychology and the endocrine glands is needed because, Dr. Blake pointed out, both of these play roles in the disease though their exact parts are not known.

Science News Letter, April 7, 1951

PHYSIOLOGY

Old at 60? Five Tests Tell Physiological Age

➤ A NEW method for determining whether a man is old or young at 60 has been worked out by Dr. Irwin M. Murray of Dalhousie University, Halifax, Nova Scotia, and State University Medical Center at New York City.

Dr. Murray tests five physiological functions: 1. range of visual accommodation, that is, how well the eyes adjust to see at various distances; 2. sensitivity of the dark adapted eye, which shows how well the eyes can see in the dark after getting used to it; 3. acuteness of hearing; 4. systolic blood pressure, and 5. strength of hand grip.

Age is expressed in terms of a combination of these five functions and the squares of those functions. The method was used on 38 business and professional men between the ages, in years, of 21 and 84. This trial showed that it can be applied equally well at all age periods, Dr. Murray told the American Association of Anatomists at their meeting in Detroit.

The standard error of the estimated physiological age was close to seven years.

The usual methods of expressing age in terms of physiological functions, or the working of the body, do not make it possible to combine the various functions of the body to give one single index of physiological age, Dr. Murray pointed out. So far as is known, this is the first attempt to combine two or more body functions for assessing the age of the body.

Science News Letter, April 7, 1951

ENCE FIELDS

ENGINEERING

Testing Device Shows Up Faults in Car Driving

➤ YOU WILL know your faults as an automobile driver after a three-minute driving test in a device exhibited at the exposition of the Greater New York Safety Council, New York. The device is an improved "roadometer," sponsored by the Aetna Casualty and Surety Company of Hartford, Conn.

In making the test, you take a seat behind the wheel of an assembly similar to that in the automobile. You press a button, and the test begins. Immediately in front of you is a motion picture which simulates what you might see when actually driving on the road. You push on your brakes, turn right or left, give signals and blow the horn just as you should do to avoid accidents.

Whatever you do is recorded automatically, and the time you take to do it.

The recorder is a "mechanical brain," a complex nest of electro-mechanical relays and gadgets that weigh the driver's actions and score them in each of nine different driving episodes in the motion picture.

To "pass" the test, the driver must jam on his brakes, steer around road barriers, slow down when a truck darts in his path, sound the horn when a pedestrian pops up suddenly ahead, and maintain a speed reasonable for the existing conditions. All the while the "brain" scrutinizes the driver, while its electrical calculators and computers determine the score. When the test is over, each driver gets a score card with total score and individual scores for each episode.

Science News Letter, April 7, 1951

ENGINEERING

Multi-Fuel Burners for Steam Generating Plants

➤ EQUIPPING boilers of industrial steam generating equipment with multi-fuel burners was recommended to the American Society of Mechanical Engineers meeting in Atlanta, Ga., as an essential step to meet emergencies resulting in fuel shortages due to international situations or domestic strikes. Such burners can be switched from one fuel to another.

The installation of multi-fuel burners capable of burning any fuel, solid, liquid or gaseous, either alone or in combination, would make manufacturing units served by such equipment practically independent of the effects of strikes, or shortages caused by a state of national emergency or war, it was declared by William H. Decker, Sinclair Refining Co., East Chicago, Ind.

In addition to coal, oil and gas, a number of waste or by-product fuels produced from manufacturing processes can be used in multi-fuel burners, he stated. Included among such by-products are petroleum pitch, petroleum coke, asphalt, tar, acid sludge, coke oven gas, refinery and natural dump gases.

In the utilization of waste fuels perhaps the greatest difficulty encountered is that the supply is often subject to wide variation over relatively short time periods, he added. The successful burning of these fuels therefore depends upon the ability of the installed units to compensate automatically for changing fuel quantities without upsetting either steam, or power production, or both with a minimum of operating attention.

Science News Letter, April 7, 1951

DENTISTRY

More Chance for Straight Teeth If Baby's Are Primitive

➤ YOUR CHILD'S chances of having straight even teeth when he grows up are best if his baby tooth arrangement has a primitive pattern somewhat like that of modern monkeys and man's anthropoid ancestors.

This is one of the conclusions of a long-term research project by Dr. Louis J. Baume, of the University of California College of Dentistry, San Francisco. He studied the teeth of 50 rhesus monkeys and 100 children.

The research provides a better basis for predicting whether young children will have later irregularities in their permanent teeth, and also suggests cheaper and improved methods of correcting dental deformities.

Science News Letter, April 7, 1951

INVENTION

Substitute Carnauba Wax For Polishes Developed

➤ SUBSTITUTE carnauba wax, which can be used instead of the widely used but imported carnauba in paste polishes, floor wax emulsions and other applications, brought patent 2,546,328 to two California scientists, Karekin G. Arabian, El Cerrito, and August A. Schaerer, Berkeley. Rights are assigned to Shell Development Company, San Francisco.

This carnauba wax substitute is claimed to be superior to others already developed. It is described in the patent as straight-chain microcrystalline hydrocarbon waxes, which possess the property of forming hard, fine-grained compositions with mineral oil similar to those formed from the natural carnauba wax. The crude wax source is waxy petroleum residues and deposits in crude oil tank bottoms.

Science News Letter, April 7, 1951

CHEMISTRY

Improved Synthetic Rubber Has Outstanding Resistance

➤ A NEW SYNTHETIC rubber, superior for certain uses to both natural rubber and other synthetic rubbers, has been developed by the U. S. Department of Agriculture.

This new rubber, known as "Lactoprene BN", has outstanding resistance to dry heat, water, oils, below-zero temperatures, and aging. It keeps its desirable physical properties at temperatures from 300 degrees to about 30 degrees below zero Fahrenheit. It is expected to excel natural rubber and other synthetic rubbers for such uses as oil seals in automobile transmissions, refrigerant seals, gaskets, and linings for fuel tanks.

Lactoprene BN was developed by scientists at the Department's Eastern Regional Research Laboratory in Philadelphia. It is similar to Lactoprene EV, a rubber with excellent high-temperature resistance previously developed by the Laboratory and now in commercial production. The new product has greater resistance to low temperature and water than Lactoprene EV, as well as high resistance to heat and oils.

The improved rubber is made from butyl acrylate and acrylonitrile, compounds which can be produced from agricultural materials (milk or corn sugars). The rubber's composition can be changed by varying the proportions of the two chemical ingredients. By this method, its swelling in oil can be modified without affecting its resistance to heat, a desirable advantage for uses involving exposure to oil.

Science News Letter, April 7, 1951

PHYSICS

New Metal Alloys Made At Lowest Temperatures

➤ METAL alloys previously unknown can be made at extremely low temperatures--down within a few degrees of the lowest temperature reached by man, near 459.6 degrees below zero on the Fahrenheit scale.

The alloys are made by low temperature condensation of two metals in the gaseous state at the same time, Dr. Rudolf Hilsch, of the Physickalisches Institut der Universitat Erlangen in Germany, told a Low Temperature Symposium in Washington, D. C.

Holding the temperatures very low, Dr. Hilsch then studies the properties of these new metal alloys, particularly the point at which they become superconducting. At that temperature, the metal seemingly offers no resistance to the passage of an electric current. Very small amounts of chromium mixed with tin reduce the transition point quite considerably, Dr. Hilsch has found.

Science News Letter, April 7, 1951

TECHNOLOGY

Aerosols Do Chores

Jet-propelled "beer cans" now used to package scores of useful materials from leg paint to whipped cream. DDT bombs started new push-button, spray era.

► JET-PROPELLED aerosols, in "A-bombs" you can buy at the corner store, are commandeering a significant part of today's household chores.

Merely by waving science's newest gadget, you will be able to apply leg paint, extrude whipped cream, squirt shaving lather, waft a perfume, distribute insect killers, spread automobile wax, put plastic film on silver teapots, give a "new-car smell" to a musty jalopy, create a liquid hairnet, blitz moths chemically, and fill the waffle iron. More than 25,000,000 "beer can" were sold in the past year. For a device invented less than 10 years ago and introduced upon U. S. counters only in 1946, the aerosol "bomb" with the push-button spray is making chemical, cosmetics and food companies sit up and take notice.

A nation-wide survey last August by dealer and consumer polltakers showed: 1. Nearly half of all housewives have already bought at least one aerosol bomb for killing insects or other jobs around the home; 2. Eight out of ten stores which stock aerosols consider them to be the most efficient way yet found to dispense a mushrooming list of everyday household materials.

Were Considered Fad

Many manufacturers once considered the aerosols merely a passing fad. These same prophets are now busily stuffing their products into pressure packages. The crow they have to eat is not such a bad dish, seasoned with booming sales figures.

Aerosols are no fad. Teamed with DDT, wonder chemical of World War II, they were credited with saving thousands of American lives in far corners of the world. They kept foxholes free of mosquitoes and uniforms free of lice.

Death rates from disease, which in all previous wars marched shoulder-to-shoulder with enemy weapons, were the lowest in history. All told more than 35,000,000 of the new "bug bombs" were made and delivered to the armed forces from 1943 to 1945.

Chiefly responsible for the development of the insect-killing bombs was a group of hard-working, little-known chemists of the U. S. Department of Agriculture. Only a few scientists had known or interested themselves in aerosol sprays until these government workers began tinkering with them in 1941 at Beltsville, Md.

The word "aerosol" means a suspension of tiny particles of liquid or solid in the air. A cloud and rolling fog bank are water aerosols. So is the spray from a sneeze.

In older household spray guns or the farmer's crop or tree sprayers, the chemical droplets produced are too large to remain hanging in the air. They are directed instead at a surface or the leaves of a plant, and the target is wet by the spray.

In the new pressure bombs, on the other hand, the air is filled with drops so small that gravity has a slow effect upon them.

The drops are self-propelled from the bomb. They are shot through a tiny orifice or jet by the force of a neutral propellant liquid which boils at a very low temperature. When the aerosol is used at room temperature, this propellant vaporizes, expanding instantly to about 260 times its original volume.

The man who touched off the aerosol industry is a 47-year-old petroleum chemist, Dr. Lyle D. Goodhue. In 1941, as an insecticide specialist for the Department of Agriculture, he wrote a scientific paper describing the efficiency of aerosols for killing insects in a greenhouse.

Snatched for Battlefield Use

Top medical men in both the Army and Navy saw quickly that the same principle could be used on the battlefield. Disease-bearing insects could be stopped cold with small hand bombs that fighting men would carry with them.

The Surgeon Generals' offices worked with Westinghouse Electric Corporation engineers in developing the first aerosol bombs. By late 1943, they were in mass production. The propellant was "Freon," a liquid with low boiling point which has been used for 19 years in refrigerators.

Military "bug bombs" carry high pressures, from 80 to 100 pounds per square inch. These necessitated metal "bottles" with walls heavy enough to prevent explosions.

When the aerosols were first introduced to civilian life in 1946, they were sold in the same heavy, relatively-costly bomb-shaped bottles. Manufacturers quickly saw short-comings. Housewives were reluctant to pay $3 to $4 for a "bomb," a large slice of which went for the container. It was

GRAND VARIETY—Aerosol bombs for dozens of products are available as demonstrated by this display in the Beltsville, Md., Laboratories of the U. S. Department of Agriculture (where it all started). Dr. R. A. Fulton and Mrs. Marjorie Parvin look over various kinds of aerosol "beer cans" and wonder what's next.

inconvenient to have to send the container back to the company for recharging.

In late 1946 the government authorized lower pressures for the spray bombs, and opened the way for light "beer can" containers which could be thrown away when empty. The aerosol industry was on its way.

New mixtures of "Freon," and other chemicals for special uses were developed which could deliver pressures ranging anywhere from one to 70 pounds per square inch. Companies could pick their own pressure, depending upon the material to be sprayed. The usual low-pressure bomb uses 35 to 40 pounds.

There are three main types of bombs today. One is the space spray, producing the tiniest of droplets. Insecticides and room deodorants, designed to fill a given space with a chemical fog, make up about 95% of all aerosols sold in the last few years.

Residual sprays, which coat a surface with a liquid, a plastic film or a paint, are the second type.

The third is the foam or lather bomb, delivering anything from whipped cream to shaving soap and shampoo.

Drug and cosmetic manufacturers are just beginning to scratch the surface of potential uses. In 1951, however, you may be able to get windshield antifreeze, home permanent waves, mildew-proofing for your clothing, dyes or poison ivy lotions in pressure cans.

Aerosol-sprayed paint has already proven practical. With a wave of one of these wonderous cans, you can now paint a wicker chair in a matter of minutes. The chore by paint-brush can make a home handyman tear out his hair at the end of a tedious, frustrating day's work.

You can apply shampoo to your hair, cold cream to your face, tannic acid to a burn on your hand, sunburn lotion to your legs, and "tired shopper's" salve to your feet with spray cans.

Car owners can apply a "no-rub" wax as an aerosol; for ignition systems, there is a spray-on plastic which waterproofs electrical wires; for fires, a handy push-button extinguisher.

From sales managers of aerosol companies, you may hear something like this: "Anything that must now be brushed on, squeezed on, sprayed on, or dispersed in the air—we can put in an aerosol can!"

All the housewife has to do is press the button.

Science News Letter, April 7, 1951

GENERAL SCIENCE

Military Experience Credit

➤ DRAFTEES and others in the Armed Forces can get credit in high school and college for their educational experience while in service. Even basic training is worth something.

The American Council on Education has recommended to schools and colleges a revised method of giving credit for what the serviceman has learned. This was first done after World War II when the council successfully evaluated Armed Forces experiences.

Now that thousands of young men will once more have their education interrupted, the council has brought its methods of evaluation up to date. Most schools and colleges are expected to accept them.

High schools and colleges are advised to give academic credit for basic or recruit training in lieu of mandatory requirements for physical education, health or military training courses.

At the high school level, young servicemen may get their diplomas if they pass a group of five high school general educational development tests. However, the council recommends that state departments of education do not grant diplomas merely on the basis of tests before the ages of 20 or 21. This is to encourage younger men to return to high school where they may get the benefit of systematic education.

The council also recommends that college credits may be given on the passing of tougher general educational development tests in five broad subject areas of learning.

In addition, credits have been worked out for most United States Armed Forces Institute, Marine Corps Institute and Coast Guard Institute courses. Service school training, too, has been evaluated.

No system has been worked out for giving school credits for combat service.

Science News Letter, April 7, 1951

On This Week's Cover

➤ AMERICA'S first airliner of the turboprop type, the kind powered by a gas turbine engine operating conventional propellers, is shown on the cover of this week's SCIENCE NEWS LETTER in a shakedown test flight near San Diego, Calif. This type of propulsion is expected to be widely used in the near future.

PHYSICS

Pressure and Cold Freeze Helium 3 for First Time

➤ A RARE form of the element helium—one that can not be frozen simply by cooling it to a low temperature, has finally been solidified for the first time. Pressure plus a low temperature of 457 degrees below zero Fahrenheit did the job of solidifying helium 3. D. W. Osborne, B. M. Abraham and B. Weinstock of the Atomic Energy Commission's Argonne National Laboratory, Chicago, reported this achievement to the Symposium on Low Temperature held in Washington, D. C.

The helium 3 was put under a pressure of 600 pounds per square inch before it solidified at the low temperature. Small quantities of the material were frozen in a tubing about the thickness of a human hair. The helium 3 is available as a decay product of radioactive hydrogen, or tritium, one of the materials mentioned for the H-bomb. Research on helium 3 is handicapped because of its scarcity in nature, where it exists as only one part in a million of ordinary helium.

Science News Letter, April 7, 1951

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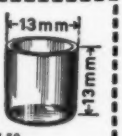

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BOTANY

NATURE RAMBLINGS

Dutchman's Breeches

➤ AMONG the earliest of our wild flowers, and among the flowers most delightful to children, are the "Dutchman's breeches." Many fancied resemblances for which flowers have been named require a considerable stretch of the imagination, but here the likeness is too obvious to escape. If there are nationalities among fairy folk, we know where the fairy "Vrouwen" hang their little boys' small clothes to dry.

It surprises some people a little to learn that these flowers, so unlike poppies in superficial form, are fairly closely related to them botanically. But there are marks of resemblance, nevertheless. The sepals, or outer green parts of the flower, are evanescent in poppies, falling off very easily. So also in the Dutchman's breeches, the sepals vanish as soon as the buds open. Again, the petals of the Dutchman's breeches are short-lived, as are also those of the poppy.

If you cut across the seed-pod of the two flowers, you will see a certain resemblance between the structure and arrangements of the reproductive parts. Another sign of the relationship can be found in the bitter taste of the sap, though that of Dutchman's breeches does not, like the juice of the poppy, contain a poisonous principle.

This dainty little plant grows best in rich soil. You can often find it hiding away in rich leaf mold accumulated between boulders and in rock crevices in deep, moist woods. Its leaves, very pale on the underside, all come directly from the ground. The leaves have three main divisions, all of them finely cut.

When big bumblebees visit the blossoms, their weight sometimes bends the delicate clusters to the ground. The bumblebees and long-tongued butterflies are its most frequent guests, however, for short-tongued insects cannot sound the depths of its nectar cups.

Closest botanical relatives of Dutchman's breeches are the squirrel-corn of the woods and the bleeding heart, that old favorite of our grandmothers' gardens. These three flowers belong to the same genus, known to botanists as *Dicentra*, a Greek name meaning two-spurred. They are thus botanical first cousins, while the poppy is related only as a second- or third-degree-removed kinsman.

Science News Letter, April 7, 1951

METEOROLOGY

Plenty of April Showers To Bring May Flowers

➤ THERE WILL be plenty of April showers to bring May flowers this year. The U. S. Weather Bureau predicts "abundant" rain over most of the nation during April.

However, the extreme Southwest, in urgent need of rain to escape threat of drought, and the extreme Southeast are scheduled to have below-normal amounts of rain, according to the Bureau's regular 30-day forecast.

That rain will be accompanied by cooler-than-normal temperatures for the country between the Rockies and the Appalachians. In the Atlantic, Pacific and Gulf of Mexico coastal states, the temperatures are expected to average not far from normal.

Science News Letter, April 7, 1951

AVIATION

Plan To Make Flying Safest Transportation

➤ TOP OFFICIALS of the major American military and civil agencies concerned with aviation safety met in Washington, D. C., to develop plans for making flying the safest form of transportation. Extensive research in safety measures is needed, it was agreed.

"As our economy and the national defense depend more each year on moving people and materials swiftly by air," Harry F. Guggenheim, president of The Daniel and Florence Guggenheim Foundation, said, "it is important for us to know that, out of a truly extensive effort, developments are beginning to appear that will realize our dream of making flying the safest form of transportation."

More than 600 research projects designed to make flying safer are currently under way in the United States, he revealed. In addition there are other projects for the same purpose that are classified as secret, he reported. The statement was based on a survey of aviation safety research in progress in institutions throughout the nation made by the Guggenheim Aviation Safety Center at Cornell University, Ithaca, N. Y.

Despite the extent of research in progress, many gaps were disclosed in the survey, it was stated by Dr. T. P. Wright, acting president of Cornell. He is chairman of the Aviation Center at Cornell and was formerly head of the U. S. Civil Aeronautics Administration.

These gaps, he said, include the need for "crash-testing" full-size robot-controlled airplanes carrying instruments and dummy crews and passengers to learn how better protection can be provided

Science News Letter, April 7, 1951

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Yardstick for Progress

➤ How can a student measure his progress in science except by comparison of accomplishments with those of others? Unless some easily recognizable standards are established nationally there is no way to evaluate success, or even to suggest paths for improvement by the expedient of comparative methods.

Fortunately, in the field of student-made science exhibits the National Science Fair does present an opportunity for both personal and expert evaluation. This Fair, made possible by local newspaper cooperation with leading educators and Science Clubs of America, the latter administered by Science Service, has as one of its aims and purposes the development of richer science exhibits through National recognition of worthy efforts. Thus it offers National honors in the field of extra-curricular scientific efforts comparable in effect with those available in the field of sports and certain scholastic competitions.

Throughout this country and in some foreign lands, science fairs have been galvanized into action by direct efforts of Science Clubs of America. Local awards usually are presented for the outstanding exhibits. By bringing together all exhibits judged best regionally it becomes possible for the student to improve his own performance. Further than that, the student broadens his interest by meetings with world renowned scientists and other student Finalists.

By seeking to attain the rank of a Finalist in the National Science Fair the student performs a service to himself, instructor, school, community and paves the path toward a better, broader scholastic record.

The ability to envisage and portray a scientific event, demanding certain specialization at the student's level far beyond that required of his classroom studies, encourages original thinking and fortifies it with action.

It is not the hope of capturing part of the $1,000.00 in "Wish Awards" which is the real thrill, according to the Finalists of the First National Science Fair. They are unanimous in listing as outstanding the opportunity of engaging in the program, the friends they have made and the winning of the Gold and Silver Finalist Medal with its proud reflections on the schools and cities and newspapers.

Each Finalist to the National Science Fair is awarded this solid silver and gold medal with rainbow ribbon, engraved with name and cooperating newspaper. Number of finalists from each area is limited by quota.

Aids National Security

Local-National Science Fairs Encourage Scientific Leadership
A Message from W. Stuart Symington, Chairman, National Security Resources Board

Scientific and technical know-how have made this Nation a leader among nations, and will keep it so.

Newspapers and educators, aware of the critical shortage of scientific personnel, are striking at the roots of the problem in a cooperative effort to encourage scientific interests at the student level through such media as Science Fairs.

With this sort of watchful leadership America never will be caught technically unprepared.

W. STUART SYMINGTON

Finalists to Meet Nobelists

Dr. Arthur H. Compton, Chancellor of Washington University and winner of the Nobel Prize in Physics in 1927, will be the keynote speaker at the dinner in honor of the Finalists of the Second National Science Fair.

Other Nobelists invited to attend are Dr. Joseph Erlanger, Medicine and Physiology in 1944, and Dr. Carl F. Cori and wife Dr. Gerty Cori, Medicine and Physiology Nobelists in 1947, and Prof. Edward A. Doisy, Medicine and Physiology, 1943.

Ten States and D. C. in National Science Fair

Exhibits judged best at the Fairs listed below, together with the selected Finalists, will represent their areas and their sponsoring newspaper at the National Science Fair in St. Louis, May 10-12, 1951 and partake of all the ceremonies scheduled for them.

Northern Connecticut Science Fair
Hartford Times, Hartford, Conn.
Tri-State Science Fair
Evansville Press, Evansville, Ind.
Quadri-County Science Fair
Archbold Buckeye, Archbold, Ohio
Oklahoma City Science Fair
Oklahoma City Times, Oklahoma City, Okla.
East Penn Science Congress and Fair
Call-Chronicle, Allentown, Pa.
Third Annual Greater Philadelphia Science Fair
Philadelphia Inquirer, Philadelphia, Pa.
Rhode Island Schools' Science Fair
Journal-Bulletin, Providence, R. I.
Third Annual Greater St. Louis Science Fair
St. Louis Star-Times, St. Louis, Mo.
Eastern New York Science Congress and Fair
Knickerbocker News, Albany, N. Y.
Oneonta Science Congress and Fair
Oneonta Star, Oneonta, N. Y.
North Dakota Science Fair
Grand Forks Herald, Grand Forks, N. D.
Martinsville Science Fair
Martinsville Bulletin, Martinsville, Va.
Fifth Annual Washington, D. C. Science Fair
Washington Daily News, Washington, D. C.

FAIR FINALISTS BECOME STS WINNERS

Up from the Ranks—When names were disclosed of winners in the tenth Annual Science Talent Search, 17-year-old Mary Helen Martin, Hyattsville, Md., was listed among the top 40. One of the four finalists from the Washington, D. C. Science Fair, she took 3rd place honors at the First National Fair in Philadelphia in 1950. At least 17 of the 260 Honorable Mentions in the tenth Search won one or more awards at local fairs.

• Books of the Week •

TO SERVE YOU: To get books, send us a check or money order to cover retail price. Address Book Dept., SCIENCE NEWSLETTER, 1719 N St., N. W., Washington 6, D. C. Ask for free publication direct from issuing organizations.

ALTERNATING CURRENT FUNDAMENTALS—Joseph J. De France—*Prentice-Hall*, 216 p., $4.65. A text especially for students of electronics.

BASIC HORTICULTURE—Victor R. Gardner—*Macmillan*, rev. ed., 463 p., illus., $4.75. A text for beginning students.

THE BOOK OF KNOWLEDGE 1951 ANNUAL—E. V. McLoughlin, Ed.—*Grolier Society*, 424 p., illus., $7.50. The yearbook of a children's encyclopedia.

NEW ELECTRONIC DISCOVERY FOR DEAF REVEALED

Acoustical Engineer Claims Even Severe Hearing Loss Can Now Be Corrected

CHICAGO, Ill. (Special)—New hope for the 15 million persons in the United States who are hard of hearing was voiced by Sam Posen, noted electronic scientist, and president of the Beltone Hearing Aid Company, in an exclusive interview with the Business Research Associates in Chicago.

Posen

He said that "through the miracle of modern electronics it is now possible to recapture hearing, even if the loss is severe, without a button showing in the ear." He demonstrated how the deaf can hear again with a clarity and ease they never dreamed possible.

To acquaint the hard-of-hearing readers of Science News Letter with Mr. Posen's amazing new electronic invention, full details are described in a fascinating booklet, "New Discoveries to Help the Deaf Hear," which will be sent free in a plain wrapper to anyone who requests it. Address: Mr. Sam Posen, President; 1450 West 19th Street, 3564 Beltone Building, Chicago 8, Ill. A penny postcard will do.

A FIELD GUIDE TO THE BUTTERFLIES OF NORTH AMERICA, EAST OF THE GREAT PLAINS—Alexander B. Klots—*Houghton-Mifflin*, 349 p., illus., $3.75. A convenient handbook useful to teachers and students as well as to collectors.

GOOD FOOD FROM FRANCE—H. P. Pellaprat, translated from the French by Charlotte Turgeon—*Barrows*, 288 p., illus., $3.00. A book to show the bride how to prepare those delicious, but economical, French dishes.

THE HAITI PILOT PROJECT—*UNESCO (Columbia University Press)*, 84 p., illus., paper, 35 cents. An early report of a UNESCO attempt to help the people of an under-developed area battle illiteracy, hunger, disease and privation as an experiment to point the way for other people facing similar difficulties.

HOW TO GROW THE BEST LAWN AND GARDEN IN YOUR NEIGHBORHOOD: A Complete Guide to Gardening and Landscaping— Edward L. Throm and Betty M. Kanameishi, Eds.—*Popular Mechanics*, 176 p., illus., $2.50. Giving professional landscaping hints to the ordinary home gardener.

AN ILLUSTRATED MANUAL OF CALIFORNIA SHRUBS—Howard E. McMinn—*University of California Press*, 663 p., illus., $6.50. A beautifully illustrated book for the nature student, gardener, or the vacationist who wants to identify the shrubs he sees.

INOSITOL—*Chemical Division, Corn Products Sales Co.*, 28 p., paper, free upon request to publisher at 17 Battery Place, New York 4, N. Y. Information about a vitamin related to the metabolism of fat and cholesterol.

INSECTS: A Guide to Familiar American Insects —Herbert S. Zim and Clarence Cottam—*Simon and Schuster*, 157 p., illus., $1.00. Made attractive with a wealth of full color illustrations is this "Golden Nature Guide" which not only aids in identifying insects but tells a little about how to study and collect them.

LETTERS ON THE ORNITHOLOGY OF BUENOS AYRES—W. H. Hudson—*Cornell University Press*, 93 p., $2.75. Delightful letters on the fauna of South America written in 1869 and 1870 to the secretary of the Zoological Society of London and now published with the permission of that institution.

ORDNANCE PRODUCTION METHODS—Charles O. Herb—*Industrial Press*, 534 p., illus., $10.00. A timely work on how to manufacture articles of war.

OTTER TRAWL EXPLORATIONS IN PHILIPPINE WATERS—Herbert E. Warfel and Porfirio R. Manacop—*Govt. Printing Office*, Fish and Wildlife Service, Research Report 25, 49 p., illus., paper, 50 cents. Contains a packet of maps.

POSSIBLE FUTURE PETROLEUM PROVINCES OF NORTH AMERICA—Max W. Ball, Arthur A. Baker, George V. Cohee, Paul B. Whitney and Douglas Ball, Eds.—*American Assn. of Petroleum Geologists*, 358 p., illus., $4.00. An up-to-date description of America's undiscovered oil resources.

PROGRESS IN ROADSIDE PROTECTION—Committee on Land Acquisition—*Highway Research Board*, Bulletin No. 30, 50 p., paper, 75 cents. Information useful in preventing accidents through controlling features along the side of the road.

THE "S" IN UNESCO—*Los Angeles City School Districts*, 67 p., paper, 35 cents. Describing, particularly for the use of teachers, what UNESCO is planning and doing in the field of science.

THE SCHOOL IN AMERICAN CULTURE—Margaret Mead—*Harvard University Press*, 48 p., $1.50. The Inglis Lecture for 1950 delivered at Harvard.

THE SEA AROUND US—Rachel L. Carson—*Oxford*, 230 p., illus., $3.50. About the oceans that make up so large a part of this world. A book for laymen.

SOME PLANT RESPONSES TO CERTAIN INSECTICIDES IN THE SOIL—Arthur C. Foster—*Govt. Printing Office*, Circular No. 862, USDA, 41 p., illus., paper, 15 cents.

TRANSIENT ANALYSIS IN ELECTRICAL ENGINEERING — Sylvan Fich — *Prentice-Hall*, 306 p., $7.35. Extends transient analysis to include modern operational methods without sacrificing the presentation of classical theory. For advanced undergraduates and graduate students.

WORLD AIRLINE RECORD 1950-51 EDITION—*Roy R. Roadcap & Associates*, 263 p., illus., $9.75. Providing useful information about 75% of the world's scheduled airline service.

WORLD TENSION: The Psychopathology of International Relations—George W. Kisker, Ed.—*Prentice-Hall*, 324 p., $5.00. Psychologists, psychiatrists and social scientists of 53 countries of the world were consulted in the preparation of this symposium. No contribution was sent by Russia although every effort was made to obtain one, and China is likewise missing. Here are "case studies in the field of national disorder."

THE YOUNG SCIENTIST: Activities for Junior High School Students—Maitland P. Simmons—*Exposition Press*, 164 p., illus., $3.00. Demonstrations suitable for a ninth-grade class.

YOUR SINUS TROUBLES AND TREATMENTS—Friedrich S. Brodnitz—*Abelard Press*, 243 p., illus., $2.50. A physician explains for non-professional readers the causes and treatments for some very common ills.

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GENERAL SCIENCE

Arctic Floating Islands

Air Force investigating possibility of using floating islands in Arctic as military bases. Discovered by weather observers on routine flights.

▶ THE ARCTIC Ocean may be studded with large floating "islands" up to 25 miles wide—islands of ice that could be strategically as well as scientifically useful.

Three of them were discovered last year merely by cursory observation as a sideline to weather flights to the North Pole. None had been seen before because no one knew what to look for until last year. However, Air Force observers speculate that, if three were so easily discovered, it is a statistical probability that there are many more.

The islands were discovered because weather observers of the 375th Weather Reconnaissance Squadron—stationed in Alaska—reasoned that they might exist, reasoned what they might look like and told men travelling on North Pole-bound planes to look for them.

A report by Lieut. Col. Joseph C. Fletcher and Capt. Lawrence S. Koenig of the 375th tells how research in the writings of Arctic explorers showed that these islands might exist and even what they looked like. It was believed that the ice on the islands, up to 1,000 feet thick, might have been piled up over long years by the winds on the shores of Alaska and the islands to the north of the continent.

Vilhjalmar Stefansson, in 1921, told how these large masses might break off from the shore. He saw masses of ice along the west coast of Banks Island which, if broken off, could form these islands.

Drs. Kenneth O. Emery and Roger Revelle at the Scripps Institution of Oceanography, La Jolla, Calif., speculate that the islands might have been formed from ice that originated in the Ice Age which ended 10,000 to 15,000 years ago. However, they say that there are serious objections to these speculations and they should be checked.

The islands are solid enough and long lasting enough so that bases could be established on them with little fear for the safety of the personnel. Smoothing of the pressure ridges so that landing strips could be built would be relatively simple, the Air Force officers believe.

Right now, crews of seven to ten men are spending a week each on a large ice floe off Alaska to test survival equipment. However, these ice floes are seldom more than 10 feet thick and are subject to cracking and collision with other floes. The islands might solve this problem.

Science News Letter, April 7, 1951

PSYCHOLOGY

Tilting Affects Perception

▶ WHICH WAY is up?

The question, so important to airplane pilots, of which direction is perpendicular, is affected by the tilt of the body and also by spinning. These effects on perception were reported to the Eastern Psychological Association meeting, Brooklyn, N. Y.

When you are sitting perfectly erect, you see a glowing perpendicular rod, shining in the dark, as tilting a little in a clockwise direction. If your body is tilted in a specially constructed chair, you have the same leaning to the right in your perception. But when you hold yourself in a tilted position, you are not so deceived.

The finding was reported by Drs. K. A. Chandler and H. Werner, of Clark University, as a result of tests on 40 students.

Your idea of which way is up is also changed when you are spinning around, Drs. R. B. Morant and S. Wapner, also of Clark University, told the meeting.

These investigators let 28 students look at a glowing rod in the dark. While they looked, they were spun around in a chair which turned over and over at a rate of 25 r.p.m. The glowing rod was turned until the spinning student reported that it looked straight up and down.

What they thought was vertical was changed not only by the spinning and its direction, but also by whether their movement was being accelerated or whether it was dying down. A vertical rod appears to be tipped toward the side of rotation when you are speeding up and away from that side when you are slowing down.

Speeding up in one direction affects your perception the same way as slowing down in the opposite direction.

The angle at which a pole is tipped will make it look longer or shorter, Drs. W. T. Pollock and A. Chapanis, of the Johns Hopkins University reported.

It has long been known that a door lying on its side on the ground looks as though it would not fit the doorway. Now these investigators have found that the upright line is not the one which appears taller. The line tipped at an angle of 60 degrees.

Your watch hand, for example, would not look longest when pointed at 12 o'clock, but at 10 o'clock, when compared with hands indicating a quarter of three.

Science News Letter, April 7, 1951

A pound of *tea* can make four times as many cups of beverage as a pound of coffee.

Rice bran, a by-product in milling rice, yields an *oil* of high quality; it is the only oil, except olive oil, that will mix with alcohol.

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New Machines and Gadgets

For addresses where you can get more information on the new things described here, send a three-cent stamp to SCIENCE NEWS LETTER, 1719 N ST., Washington 6, D. C. and ask for Gadget Bulletin 564. To receive this Gadget Bulletin without special request each week, remit $1.50 for one year's subscription.

BINOCULARS for watching various sports are worn like spectacles on the bridge of the nose, leaving both hands entirely free. Made largely of aluminum, they are light in weight, weighing only three ounces, although they are three-power focusing.

Science News Letter, April 7, 1951

ETHERIZER, for use in the hospital operating room, assures a proper mixture of the anesthetic with air and delivers the vapor to the patient at a proper temperature. Its vaporizing unit is a cylindrical chamber containing activated carbon on which ether drips from a receptacle above.

Science News Letter, April 7, 1951

LIGHTWEIGHT outboard motor for pleasure boats, which develops 25 horsepower but weighs only 85 pounds, is made largely of die cast aluminum. Easily handled because of its light weight, it is said to have the lowest power-weight ratio in the outboard field.

Science News Letter, April 7, 1951

PHOTOGRAPHIC equipment for employee identification is a complete unit including camera, lights, numbering device and an adjustable background, all on a sturdy stand. Camera and background are adjusted to the proper height of the person whose picture is being taken by one simple wheel operation.

Science News Letter, April 7, 1951

VINYLITE plastic head and hat cover, for use in a rain, fits completely over the head and ties with straps under the chin, as shown in the picture. When removed and the two ends pulled, it folds into a narrow strip, which then can be further folded to fit an envelope of the same material, making a cigarette-size package.

Science News Letter, April 7, 1951

VENT TUBE and breathing blister, which can be attached inside any style of boot, provides ventilation to the foot and keeps it dry. The tube, as high as the boot-top, sucks in air when the boot is lifted from the ground, and pushes it out when the boot touches the ground again.

Science News Letter, April 7, 1951

MOVABLE base for a ladder, recently patented, permits the user to shift the ladder along a building without descending from its top. It is a small four-wheel truck, pulled forward by an attached rope which passes through a pulley on a stake and up to the user.

Science News Letter, April 7, 1951

WRITING case, for soldiers, travelers and students, comes in various colors and is made of a long-wearing, easily-cleaned plastic with welded seams. It comes complete with a writing tablet, address book, envelopes, pencil, identification card, and a pocket for a photograph.

Science News Letter, April 7, 1951

Do You Know?

The Venezuelan Guanoco Asphalt Lake is considered the largest natural *asphalt* deposit in the world.

Beavers are good swimmers but only their hind feet are webbed.

India is setting up a plant to produce *penicillin* for local use.

Crease-resistant *finishes* are now applied to many fabrics, including cottons, linens and rayons.

A *lioness* at the Philadelphia zoo, that died recently at the ripe old age of 19 years, was the mother of 27 cubs in her lifetime.

The *beaver* made up the main bulk of all trapping and fur trading done in early days in America.

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